REMARKS

Claims 16-20 and 27-31 are pending in this application. No claims are amended.

Rejection under 35 U.S.C. § 103(a)

The present invention generally relates to aqueous phytopathological formulations comprising at least one aminophosphate- or aminophosphonate-type herbicide, at least one betaine-type principal surfactant, and at least one alkylmonoglycoside or alkylpolyglycoside additive.

The Final Office Action continues to reject claims 16-20 and 27-31 as obvious under 35 U.S.C. § 103(a) over Sato *et al.* (U.S. Patent No. 5,998,332)("Sato") in view of Koenig et al. (WO 01/26469) ("Koenig"). *See* Office Action at 2-3.

According to the Office Action, Sato teaches high concentration glyphosate compositions comprising activity enhancing surfactants such as trialkylbetaines and alkyl glycosides/ polyglyocosides at amounts ranging from 2 to 25% by weight, with optional additives such as inorganic salts, and additional active agents such as bialaphos and glufosinate. *See* Office Action at 2. According to the Office Action, Koenig teaches a composition comprising isopropylamine salt of glyphosate and suggests the addition of surfactants including betaine derivatives and alkyl glycosides. *See* Office Action at 2.

Although the Office Action acknowledges that neither Sato nor Koenig teaches a composition comprising an isopropylamine salt of glyphosate, trialkyl betaines, alkyletheramines and polyglycosides, the Office Action states that, "it would have been obvious to make the instant composition since the combination of references suggests the composition. One of ordinary skill in the art would have been motivated to combine these references because they

disclose components, which are useful for formulating and enhancing the activity of aqueous glyphosate or aminophosphate herbicide compositions." Office Action at 2-3. In response to Applicants' arguments, the Final Office Action clarifies that, "although neither reference exemplifies the presently claimed composition individually, the combination of the references does make...the instant composition obvious, i.e., the combination of Sato and Koenig, both drawn to herbicidal utility, makes obvious the presently claimed herbicide composition comprising an isopropylamine salt of glyphosate, trialkyl betaines, alkyletheramines and polyglycosides." Office Action at 3. Applicants respectfully traverse.

As an initial matter, Applicants note that claim 32 as previously canceled, and none of the claims recites alkyletheramines.

The *Prima Facie* Case

Sato discloses aqueous herbicidal compositions comprising high concentrations of ammonium glyphosate together with a surfactant. *See* Sato at col. 1, lines 8-10. Sato teaches that "[s]uitable surfactants as components of the surfactant system include nonionic surfactants, cationic surfactants, anionic surfactants and amphoteric surfactants." Col. 8, lines 5-7. Sato further discloses that "Examples of surfactant classes which may be useful include without restriction..." followed by a long list of surfactant classes that includes betaine derivatives and alkyl glycosides/ alkyl polyglycosides. Sato at col. 8, lines 12-30.

In addition, the examples of Sato employ three different surfactant mixtures, each having three surfactants at various ratios chosen from the list above, not one of which is a betaine or a glycoside. Sato at col. 15, lines 25-47. While a reference's disclosure is certainly not limited to what is taught by the examples, Applicants respectfully submit that--especially in a selection

situation as presented by the present references--preferred embodiments or examples directing one of ordinary skill in that art away from the particular combination of surfactants is highly relevant to the obviousness inquiry as a teaching away from the claimed formulations.

As Applicants have discussed previously, given the nearly "infinite" possible combinations of one, two, three or more surfactants, and the lack of any specific teaching regarding the combinations of surfactants claimed, Sato states, "The choice of surfactant is very important. For example, in an extensive study...Wyrill and Burnside found wide variation among surfactants and their ability to enhance herbicidal efficacy of glyphosate." Sato at col. 1, lines 63-67 (emphasis added). Sato also discloses that "herbicidal effectiveness of glyphosate salt solutions is highly dependent upon two factors: selecting a suitable surfactant and providing as high a concentration of that surfactant as possible in the concentrate formulation." Sato at col. 4, lines 7-10. Therefore, Sato teaches both the variability and criticality of surfactant choice yet provides examples of only three surfactant mixtures (which do not employ the presently claimed surfactants) for use with ammonium glyphosate at a specific pH.

As is well established under 35 U.S.C. § 103, a prior art reference must be considered in its entirety. Here, the Office Action divorces the large list of surfactants from the fact that (1) Sato emphasizes numerous times that the particular selection of surfactant is absolutely critical to the functioning of the composition, and (2) that it is only in the context of a very specific ammonium glyphosate salt that the particular surfactant combinations described by Sato are effective. The present claims are not limited to that specific ammonium glyphosate salt. It is therefore fair to say that one of ordinary skill in the art, at the time of the invention, would not merely have picked from Sato's list of surfactants with a reasonable expectation of obtaining a suitable combination. Indeed, quite the opposite is true.

Koenig teaches that by mixing the isoproplyamine salt of glyphosate with the ammonium salt of glyphosate, particularly in certain ratios, stable compositions can be formulated. *See* Koenig at 2, lines 1-3. Koenig teaches that "the surfactant component may include one or more surfactants," and then states that "[e]xamples of surfactants which may be useful include..." followed by what the Office Action itself describes as a "host" of surfactants. Koenig at 3-4; Office Action at 4, bottom.

Applicants submit that as shown by the cited references, the art of the present invention is unpredictable, and the choice of surfactant critical. Yet neither Sato, nor Koenig teaches the specific combination of betaine and glycoside surfactants claimed. Indeed, if anything, both Sato and Koenig teach away from the claimed invention by pointing one of skill in the art to surfactants that are not claimed.

In response to similar arguments made previously, the Office Action states that "[t]he mere fact that Sato list betaines and alkyl polyglycoside as possible surfactants to be combined with the glyphosate makes the combination obvious," and "[t]he mere fact that Koenig list betaines and alkyl polyglycoside as possible surfactants to be combined with the glyphosate makes the combination obvious." Office Action at 4-5. Although not made explicit, Applicants understand the Office Action as asserting that the particular combination of surfactants claimed would have been "obvious to try" because of the mere naming of the claimed surfactants along with a "host" of other surfactants in both references. Applicants respectfully disagree.

In *In re Kubin*, the Federal Circuit recently reiterated its clarification of two classes of situations where "obvious to try" is erroneously equated with obviousness under § 103:

> 1) "[W]hat would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which

> parameters were critical or no direction as to which of many possible choices is likely to be successful. In such circumstances, where a defendant merely throws metaphorical darts at a board filled with combinatorial prior art possibilities, courts should not succumb to hindsight claims of obviousness."
>
> 2) "[W]hat was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it."

In re Kubin, 561 F.3d 1351, 1359 (Fed. Cir. 2009)*(citations omitted)*.

With regard to the first situation, Sato and Koenig give no indication of which parameters are critical or which choices are likely to be successful (*i.e.*, why one of ordinary skill in the art should choose betaines and glycosides from among the host of surfactants presented in each reference). Indeed, Sato teaches that "[t]he choice of surfactant is very important," that there is "wide variation among surfactants in their ability to enhance the herbicidal efficacy of glyphosate" but that "[t]hose skilled in the art will recognize that other surfactants not included [in Sato's long list of surfactants]...may be equally useful." Sato at col. 1, lines 63-67 and col. 8, lines 30-32. This is hardly an identification of "which choices are likely to be successful," especially when the particular examples teach away from the claimed combination of betaine and glycoside surfactants. Koenig likewise gives no indication of which surfactants among the nearly infinite possible combinations of surfactants would be successful, except to say that phosphate esters should be used, which again would have lead one of ordinary skill in the art away from the claimed surfactant combination.

With regard to the second *Kubin* situation, Sato and Koenig "[give] only general guidance as to the particular form of the claimed invention or how to achieve it." As discussed above, each reference teaches a host of surfactants without any guidance to select the

combination of betaine and glycoside surfactants.

Accordingly, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art having knowledge of Sato and Koenig to arrive at the subject matter of the instant claims because 1) the claimed combination of surfactants would not have been "obvious to try" as one of ordinary skill in the art would have been "merely throw[ing] metaphorical darts at a board filled with combinatorial prior art possibilities" to arrive at the claimed combination of surfactants, and 2) to the extent the cited references teach how to choose among the numerous surfactants disclosed, such teaching would have lead one of ordinary skill in that art away from the claimed invention.

Applicants respectfully submit that under current law, the Office Action does not establish a *prima facie* case of obviousness and this rejection should be withdrawn.

Secondary Considerations

Nevertheless, even if the Examiner maintains that a *prima facie* case has been established, Applicants respectfully submit that such case is overcome by a showing of unexpected results as set forth below:

Experimental Results

The following experimental results show that compositions comprising (C_{12}-C_{14}) alkyl dimethylbetaine and (C_8-C_{10}) alkyl polyglucoside unexpectedly exhibit a better average herbicidal control than compositions with betaine alone or alkylpolyglucoside alone.

The herbicide compositions of Examples 1 - 3 and Comparative Examples C1-C3 were aqueous solutions made by combining the listed ingredients in the relative amounts shown

(based on 100 pbw of the respective pesticide composition) set forth in Table I below with mixing.

Table I

Ex #	glyphosate IPA (pbw)	(C_{12}-C_{14})alkyl dimethylbetaine (pbw)	(C_8-C_{10})alkyl polyglucoside (pbw)	water (pbw)
1	41.8	2.93	0.36	54.91
2	41.8	2.79	0.72	54.69
3	41.8	1.86	2.9	53.44
C1	41.8	3.1	0	55.1
C2	41.8	0	7.24	50.96
C3	41.8	0	0	58.2

The efficacy of the compositions in controlling plant growth was tested, in 3 replicates, by diluting each of the compositions of Examples 1-3 and C1-C3 1:88 with water and applying each of the dilute herbicide compositions at a rate of 10 gallons per acre (0.25 pint glyphosate, as acid equivalent, per acre using a stationary track sprayer to each of the plant species listed below.

Corn	"CN"
Shattercane	"SC"
Barnyard grass	"BG"
Velvetleaf	"VL"
Hemp Sesbania	"HS"
Ivyleaf Morning Glory	"IM"
Soybean *glyphosate resistant*	"SB"
Kochia	"KO"

Sicklepod	"SP"
Lambsquarter	"LQ"
Purslane	"PS

Results at 28 days post application are given in Parts A and B of TABLE II below as percent control of plant growth, as indicated by plant weight, for each of the various plant species tested, averaged in each case for the 3 replicates, and as an overall average value for all species tested ("Ave.")

TABLE II, Part A

Ex #	% Control of Plant Growth					
	CN	**SH**	**BN**	**VL**	**HS**	**IM**
1	70	90	60	50	50	70
2	60	70	50	40	40	50
3	60	60	0	40	40	40
C1	40	60	40	20	20	20
C2	60	60	20	10	0	0
C3	70	60	0	40	0	0

Table II, Part B

Ex #	% Control of Plant Growth					
	SB	**KO**	**SP**	**LQ**	**PS**	**Ave.**
1	0	60	50	60	60	**56**
2	0	40	30	80	60	**47**
3	0	40	0	60	60	**36**
C1	0	0	2	40	0	**24**
C2	0	60	0	80	60	**32**
C3	0	0	0	10	20	**18**

Summary

Ex #	glyphosate IPA (pbw)	(C_{12}-C_{14})alkyl dimethylbetaine (pbw)	(C_8-C_{10})alkyl polyglucoside (pbw)	water (pbw)	Average control
1	41.8	2.93	0.36	54.91	**56**
2	41.8	2.79	0.72	54.69	**47**
3	41.8	1.86	2.9	53.44	**36**
C1	41.8	3.1	0	55.1	**24**
C2	41.8	0	7.24	50.96	**32**
C3	41.8	0	0	58.2	**18**

Clearly, the particular combination of betaine and polyglycoside surfactants unexpectedly yielded better control of plant growth with glyphosate than either surfactant alone. Accordingly, Applicants respectfully submit that the subject matter of the present claims is not obvious in view of the above showing of unexpected results. Withdrawal of the rejection is respectfully requested.

Conclusion

Applicants submit that all claims are in condition for allowance; notice to that effect is hereby solicited. Should any issues remain to be discussed in this application, the examiner is invited to contact the undersigned by telephone.

Respectfully submitted,
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